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Approved For Release 2003/08/05 : CIA-RDP78B04747A002200030037-5

To:	Classified		
•	Washington,	DC	
•			

Quantity	Description		
1	Model 635 Film Viewing Table		
1 set	Reproducible copies of drawings		
1 set	Reproducible list of drawings		
1 set	List of drawings		
	The following is GFE being returned:####################################		
1	Stereoscope, Versatile; complete with accessories including mount & rotatable arm.		
	Stock No. 6640-H99-3884		
	(originally shipped to Voucher 66-32661-FV1F)		
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	Your P.O. #Classified		

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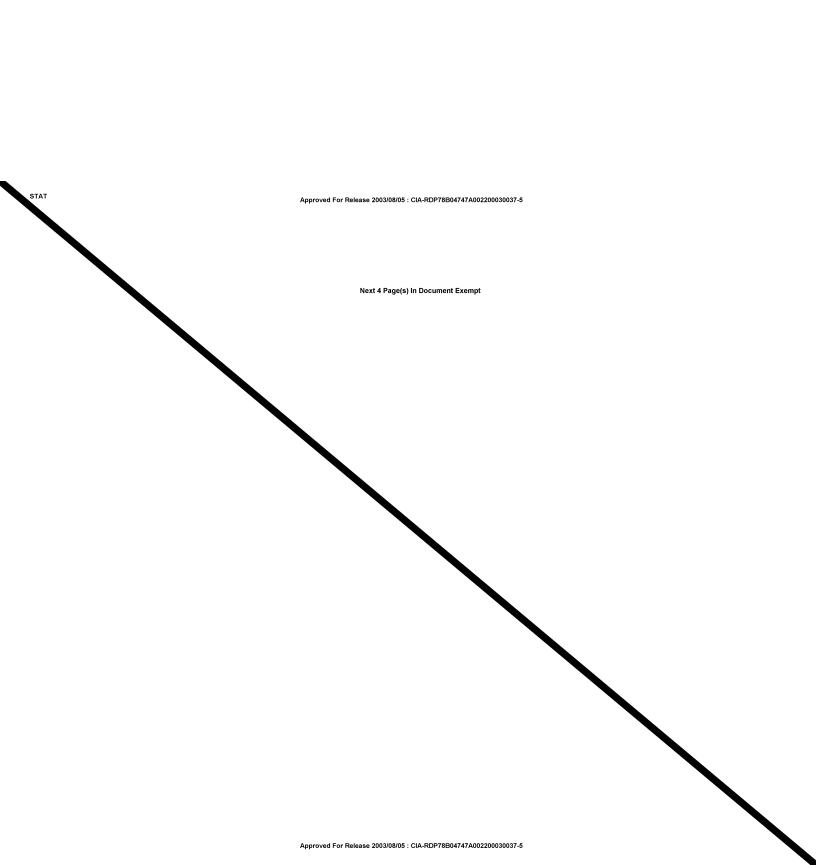
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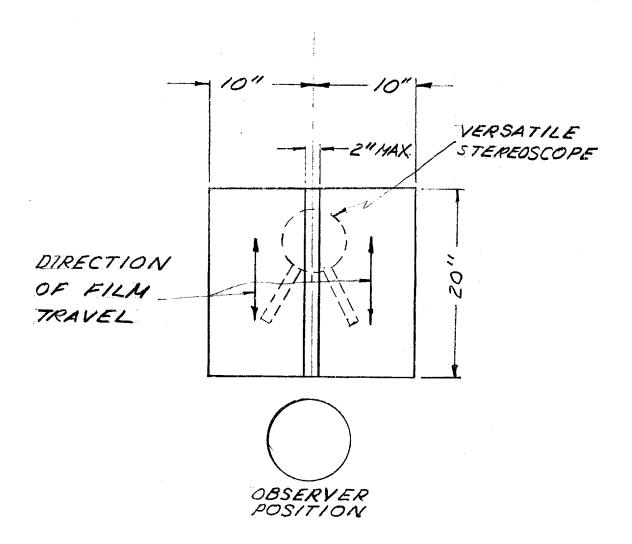


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TECHNICAL SPECIFICATIONS FOR A VERSATILE STEREOSCOPE

- 1. Continuously variable magnification 3x to 120x accomplished by a .7 to 3x zoom element, a 10x eyepiece and three separate rhomboid relay systems giving 3x to 12.9x, 7x to 30x and 28x to 120x respectively.
- 2. Resolution on the order of 600 lines/mm is obtained at 120x.
- 3. Zoom magnification is independently variable in the right and left channels.
- 4. Independent image rotation is available in both right and left eyepieces.
- 5. The 4.0x high-power relay has a limited depth of field; as a consequence, an auxiliary focus is provided in the rhomboids.
- 6. The lOx eyepieces have an eye relief of approximately 22mm.
- 7. Below.

RELAY MAGNIFICATION	(Approx.) WORKING DISTANCE	OPTICAL AXIS SEPARATION	MAGNIFICATION RANGE	FIELD OF VIEW	DEPTH OF FOCUS
•43x	1-5/16"	72 - 465 mm	3x to 12.9x	67mm to 15.4mm	4.5mm to
lx	1 - 5/16"	32 - 469mm	7x to 30x	28.7mm to 6.6mm	.8mm to
4x	1"	41-419mm	28x to 120x	7.1mm to 1.6mm	.05mm to



BASIC LAYOUT FOR ADVANCED LIGHT TABLE

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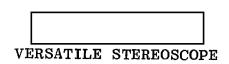


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March, 1965

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The Versatile Stereoscope is a desk top instrument for the stereoscopic study of 70mm, 5" and 9-1/2" film. It covers the magnification range from 3X to 120X. Axial resolution is approximately 6 lines per millimeter per power, up to a minimum of 500 lines per millimeter at 120X.

Basically, the instrument consists of a zoom power pod, three relay lens systems, a focusing arm, and a scanning base. It is equipped with a number of special features to make the photo interpreter's job easier, his work extremely precise.

The Zoom Power Pod

The power pod uses the zoom optics of the StereoZoom^R Microscope. Power pod magnification is .7X to 3X. There are two identical optical trains each of which consists of an eyepiece, de-rotation prism assembly, prism cluster, and dual zoom elements.

Ten-power wide-field eyepieces are used in the Versatile Stereoscope. They offer an eye relief of approximately 22mm, permitting comfortable use by persons wearing glasses. One eyepiece tube is focusable, enabling the observer to balance the acuity of his eyes. By using a single eyepiece magnification, the system is able to achieve the maximum ratio of resolving power to magnification.

The de-rotation prism assembly is a Pechan prism in a rotating mount. As the assembly is rotated with respect to the object, the image is rotated through twice the prism rotation angle. Total image rotation is 360°. Index marks are provided to locate the non-rotated position.

The prism cluster brings the image from the zoom elements to the eyepiece in the proper orientation for viewing. The cluster also permits the eyepieces to be adjusted for interpupillary distance (a lock screw is provided so that eyepiece spacing can be locked in any set position between 60mm and 72mm).

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The three-element zoom system varies the magnification in a ratio of 4:1. The operator can drive the two zoom trains in unison, or each one individually.

The Relay Lens Systems

The complete magnification range from 3X to 120X is achieved by interchanging three relay systems on the instrument power pod. The .43X low-power relay covers the range from 3X to 12.9X; the 1X medium-power relay covers the range from 7X to 30X; the 4X high-power relay covers the range from 28X to 120X.

Each of the relay systems consists of a pair of rhomboid arms which house the optical components of the system. The relay is mated to the power pod by means of a dove slide for precise repetitive alignment and convenient interchangeability. During final assembly, each relay is aligned to the power pod it will be used with to insure optimum performance.

Mechanical design of the relay systems permits viewing the formats of 2-1/4" x 2-1/4" on 70mm film, 4-1/2" x 4-1/2" on 5 inch film, and 9" x 9" on 9-1/2" film. By rotation of the rhomboid arms, maximum and minimum conjugate image separation are accommodated.

Each rhomboid arm is equipped with a ball tipped pointer which can be positioned in or out of the field of view. The pointer allows the operator to quickly make a coarse centering of the fields of view by direct visual observation.

When the rhomboid arms have been placed in the desired position, they can be locked in that position. If further fine adjustment is required, it can be made by rotating a tangent screw on each rhomboid arm.

The Focusing Arm

The focusing arm holds the versatile stereoscope pod and houses the focus control. A coarse focus for rapid positioning, and a fine focus for detail work are provided. Working distance (minimum) from film plane to bottom of rhomboid is 2-1/4" for the low-power relay, 2-3/4" for the medium-power, and 1" for the high-power. In any given range the working distance will be fixed. This permits the operator to change magnification throughout the range without refocusing.

Approved For Pelease 2003/08/05: CIA-RDP78B0474 002200030037-5 To facilitate focusing when the 4X relay system is in use, this rhomboid pair is equipped with an auxiliary fine focus. This permits parfocalizing the left and right optical trains to compensate for non-uniformity in the film plane. The low-power and medium-power relay systems have been factory parfocalized, and, because of their greater depths of field, further adjustment is not necessary.

The Scanning Stand

This stand provides scanning in one direction. It can be positioned to scan either along or across the direction of film motion. Four adjustable legs are provided so that the stand can easily be leveled on a light table.

Normal usage of the instrument will position the stand so that it can be used to scan in the Y direction. In this orientation, scan in the X direction is accomplished by advancing the film. The stand is supplied with a brake lever so that the scanning mechanism can be locked into any desired position.

Protective bumpers prevent the 4X rhomboid from hitting the stand during a scanning operation. All edges of the stand which might come in contact with the film are smoothed and polished to protect the film from possible damage. Hand holds are provided on the stand to facilitate transporting and positioning of the stand.

Zoom Control

The zoom change is controlled by three knobs. A large center knob varies the magnification of both optical systems simultaneously. When this knob is disengaged, each zoom system can be varied independently by its respective control knob. To return from individual to dual control of magnification, the operator simply places both systems at the lowest magnification and engages the center knob.

Carrying Case

A sturdy carrying case for transporting and storage of the power pod and rhomboid arms is provided as standard equipment.

Approved For Delease 2003/08/05: CIA-RDP78B0474 002200030037-5 Performance Specifications

Relay	0.43X	<u>1.0X</u>	4.0X
Magnification - Range 3X to 120X*			
Low Zoom	3.0	7.0	28
High Zoom	12.9	30	120
Field of View (mm)*	•		
Low Zoom	67	28.8	7.0
High Zoom	15	6.5	1.6
Working Distance (in.) Film Plane to		0,0	1.0
Bottom of Rhomboid (min.)	2-1/4	2-3/4	1
Distance (in.) from Film Plane to Lowest	, _,	_ 0, 1	*
Point of Instrument Interference	1-5/8	1-1/2	15/16
Rhomboid Separation (mm)	2 0, 0	1 1/2	10/10
Minimum -	74	33	35
Maximum -	450	485	405
Miminum Resolution (axial) line/mm	200	100	1 00
(Measured with High Contrast Target)		•	
Low Zoom	20	57	200
High Zoom	64	143	500 500
	O.A.	T-40	500

Interpupillary Distance adjustable from 60 - 72mm.

Image Rotation 360° in each optical train.

Weight (nominal)	
Pod only	5 lbs.
.43X Relay	9 lbs.
1.0X Relay	9 lbs.
4.0X Relay	11-1/4 lbs.
Carrying Case (empty)	15 1bs.
Stand only	40-1/2 1bs.
Stand with focusing adapter and pod holder	46 lbs.
Overall dimensions (Maximum) Height 16-5/8" from film plane to Width 30-1/2" Depth 30-1/2"	
Y axis scan motion (nominal) With 4.0X relay and auxiliary stops With either 1.0X or 0.43X relay and normal stop	12'' s 17''

^{* ±1%}